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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,285	09/24/2001	Akira Tsuboyama	684.3255	4759

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
YAMNITZKY, MARIE ROSE	

ART UNIT	PAPER NUMBER
1774	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/960,285	TSUBOYAMA ET AL.	
	Examiner	Art Unit	
	Marie R. Yamnitzky	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2003 and 25 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-34* is/are pending in the application.

4a) Of the above claim(s) *19-25,27 and 28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,26 and 29-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *17-34* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. This Office action is in response to applicants' amendment received September 25, 2003 (Paper No. 9), which amends the abstract, cancels claims 1-16 and adds claims 17-34.

This Office action is also in response to the certified translations received September 25, 2003 for the four foreign priority applications.

Claims 17-34 are pending.

2. The Information Disclosure Statement received May 30, 2003 (Paper No. 8) has been considered by the examiner. The cited references are made of record.

3. In the second line of the replacement paragraph for page 37, lines 21-25, "Pt" has been changed to --Ir--. Metal coordination compounds 1-10 are iridium compounds rather than platinum compounds.

4. The claims remain subject to an election of species requirement. The elected species is a compound of formula (1)/luminescence device comprising a compound of formula (1) in which M is Ir, CyN is "Pr" as shown on page 23 of the specification and CyC is "Tn1" as shown on page 23 of the specification. New claims 17, 18 and 29-34 read on the elected species. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election **without** traverse (MPEP § 818.03(a)).

Claims 19-25, 27 and 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking

claim. (Claim 26 is drawn to a nonelected species but has been examined since a reference pertinent to this species is already of record.)

5. Claims 17, 18 and 29-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The subgenus of compounds defined in "A)" as set forth in independent claim 17 is not supported by the application as originally filed. The application as originally filed does not disclose any compounds meeting the limitations of the subgenus of compounds defined in "A)". The compounds as defined in "A)" are compounds of formula (1) in which CyN is "Pr" as shown on page 23 of the specification, CyC is "Tn1" as shown on page 23 of the specification, and none of the variables R_1-R_4 represent hydrogen. The application as originally filed does not disclose any compounds in which each of R_1-R_4 represents something other than hydrogen.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 17, 18 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1).

Igarashi et al. disclose various iridium complexes for use as light-emitting materials in electroluminescent devices. Igarashi et al. do not explicitly disclose compounds meeting the limitations of an iridium compound as defined in "A)" in present claim 17, but such compounds are suggested. For example, see Formula (11) on page 8 of the published application and paragraphs [0070]-[0074].

The compounds as defined in "A)" are tris(thienylpyridine)iridium complexes. Compounds of formula (11) where m1 is 3 as taught by Igarashi et al. are tris(thienylpyridine)iridium complexes. Igarashi et al. teach that the thiophene ring of the thienylpyridine ligand may have 0-2 substituents, and the pyridine ring may have 0-4 substituents. The most preferred substituent is an alkyl group as taught in paragraph [0071] but, as taught in paragraph [0070], other substituents may be used. Paragraph [0050] sets forth other possible substituents.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other iridium complexes suggested by Igarashi et al. One of ordinary skill in the art would have been motivated to make iridium complexes suggested by Igarashi et al. other than those specifically disclosed in order to obtain a variety of iridium complexes suitable for use in an electroluminescent device. One of ordinary skill in the art would have reasonably expected that other compounds suggested by Igarashi et al. would have been suitable for use as light-emitting materials in electroluminescent devices.

With respect to present claim 29, see paragraphs [0005], [0157] and [0173] of the published application in particular. The device described in paragraph [0157] utilizes an unsubstituted tris(thienylpyridine)iridium complex as the emitter. The device emits light exhibiting an emission spectrum peak wavelength greater than 550 nm. One of ordinary skill in the art at the time of the invention, considering the disclosure of the published application as a whole, would recognize that the emission spectrum peak wavelength can be altered by modifying the ligand of the iridium complex. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable and optimum substituents for a tris(thienylpyridine)iridium complex as suggested by Igarashi et al. in order to provide a device have a particular desired color of light emission.

With respect to present claim 30, an unsubstituted thienylpyridine ligand has a dipole moment of 1.8 debye (as disclosed in Table 12 on page 59 of the present specification). It is the examiner's position that it is reasonable to expect that at least complexes of formula (11) having alkyl substituents on the thiophene and pyridine rings would meet the limitations of claim 30. It is also reasonable to expect that complexes of formula (11) having the same substituents on the thiophene ring as on the pyridine ring would meet the limitations of claim 30 since the polarity in individual substituents would tend to cancel each other out, being on opposite ends of the ligand.

With respect to present claims 31-34, see paragraph [0002] of the published application in particular. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to utilize a luminescence device as suggested by Igarashi et al. for applications in which the light-emitting characteristics of the device would be useful.

8. Claims 17, 26 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grushin et al. (US 2002/0121638 A1).

Grushin et al. disclose iridium coordination compounds for use in electroluminescent devices. An iridium coordination compound as defined in "I)" of present claim 17 is clearly suggested by the teachings of Grushin et al. An iridium coordination compound as defined in "I)" is a compound of the fourth or fifth formula of the prior art in which L has structure (I) in which A is N, each of R_2-R_5, R_7 and R_8 is H, and R_6 is F. In particular, see paragraphs [0017]-[0021] and [0044]-[0047] of the prior art. Such a compound is similar to the compound 1-g as defined in Table 1 of the prior art, having a pyrimidine ring (A of formula (I) = N) instead of the pyridine ring (A of formula (I) = C) of compound 1-g.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other iridium complexes suggested by Grushin et al. One of ordinary skill in the art would have been motivated to make iridium complexes suggested by Grushin et al. other than those specifically disclosed in order to obtain a variety of iridium complexes suitable for use in an electroluminescent device. One of ordinary skill in the art would have reasonably expected that a compound similar to Grushin's compound 1-g having phenylpyrimidine ligands in place of phenylpyridine ligands would be suitable for use as a light-emitting material in an electroluminescent device since Grushin teaches that A of formula (I) may represent C or N. The disclosure of A as representing C or N suggests that fluorine-substituted phenylpyrimidine ligands and fluorine-substituted phenylpyridine ligands are equally suitable for the purposes of Grushin's invention.

With respect to present claims 29 and 30, the compound as defined in "I)" of present claim 17 is a specific compound. Absent evidence to the contrary, the examiner will presume that the compound as defined in (I)" inherently provides an emission peak wavelength as required by claim 29 and inherently meets the limitation set forth in claim 30. Accordingly, this compound as suggested by Grushin et al. would inherently provide a device meeting the limitations of claims 29 and 30.

With respect to claims 31-34, see paragraph [0004] of the prior art in particular. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to utilize a luminescence device as suggested by Grushin et al. for applications in which the light-emitting characteristics of the device would be useful.

9. Applicants' arguments filed September 25, 2003 have been fully considered but they are not persuasive.

With respect to the availability of Igarashi's publication as prior art, the examiner has considered the certified translations of applicants' four foreign priority applications. None of the foreign priority applications discloses compounds as defined in "A)" of present independent claim 17 wherein none of R_1-R_4 represent hydrogen. Accordingly, it is the examiner's position that Igarashi's published application remains available as prior art, Igarashi's application having been filed in the U.S. prior to the U.S. filing date of the present application.

10. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 are (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY
December 05, 2003

Marie R. Yamnitzky

MARIE YAMNITZKY
PRIMARY EXAMINER
1774